

Clariant fosters innovation

A recently acquired contract and newly developed flowback aid highlight Clariant Oil Services' history of nurturing innovation and sustainability

THE global, Houston-based provider of chemical products and services has a long history of pushing the boundaries and stretching limits when it comes to new technologies, and is well-known for developing state-of-the-art products with an emphasis on continuous improvement and sustainability.

"We are guided by the needs of our customers as we develop ecologically sustainable products and mechanisms to help optimize each stage of the oil and gas life cycle," Doug Hayes, Head of Clariant Oil Services recently told the company's annual publication, *The Innovator*.

Clariant's commitment to innovation can be seen in both the products it offers and the processes in place which enable these products to be developed. Clariant's Centers of Excellence are hubs for the development and enhancement of specialty oilfield chemicals.

Clariant Oil Services Gulf of Mexico Center of Excellence in Houston, Texas, features robust capabilities encompassing deepwater, flow assurance, integrity management and well service additives, as well as pipeline cleaning and chemical solutions. The recently-opened 100 million euro Clariant Innovation Center in Frankfurt, Germany, which serves as the corporation's global research and development hub, provides a broad range of research and testing services and is structured within Clariant Corporation's ambitious R&D program.

Clariant's commitment to continuous improvement can be seen in the company's dedication to acting sustainably, which CEO Hariolf Kottmann calls an "integral part of [Clariant's] corporate strategy." Clariant has been listed as a member of the Global Dow Jones Sustainability Index since 2014; out of the 2,500 companies listed on the Dow Jones Global Stock Market Index, only the top 10% of the most efficient companies in the areas of economic, environmental, and social responsibilities are listed. Additionally, the company has a dedicated Sustainability Council devoted to these efforts.



Such investments, coupled with the strive to push past technological limits, set Clariant apart from the competition, and enable the company to provide sustainable solutions worldwide.

Johan Sverdrup

To be truly effective, a company must go beyond state-of-the-art facilities and programs. Performance must be proven through long-term stability, both in the field and through continuous relationships with clients. In these aspects, Clariant shows a proven ability, building teams from the ground-up with a focus on cultivating long-term innovation projects and creating substantial client relationships.

Most recently, Clariant signed a framework contract with Statoil to supply production chemicals and services for the Johan Sverdrup oilfield for eight years, with a four-year extension option. According to Frode Bekkestad, Managing Director of Clariant Oil Services Scandinavia, the agreement will provide the "foundation for a long-term, successful relationship" between Clariant and Statoil, "with the goal of delivering enhanced performance over the full term of the contract."

"This long-term contract, especially with the highly contested bid process, shows the confidence Statoil has in Clariant's capabilities to provide supply of innovative chemicals and services to meet their needs," Bekkestad says.

The agreement, which Bekkestad notes will "continue to strengthen Clariant Oil Services' position as a major supplier in the oil production chemicals market in the North Sea," places Clariant at the forefront of the largest offshore oil find in the Norwegian continental shelf in 30 years. The field is estimated to hold between 1.7 and 3.0 billion barrels of oil equivalents and is expected to produce 550,000 to 650,000 barrels of oil per day when fully developed.

Higher yields with HOSTAFRAC® SF

A complete provider for the entire oil and gas value chain, Clariant Oil Services develops products designed to maximise oil and gas production. Clariant's newly developed product, the flowback aid, HOSTAFRAC SF, is just one more example of the company's dedication to innovation, with an emphasis on enhancing the profitability of fields with concern for the environment.

A chemical additive designed to produce a higher proportion of fracturing fluids and, subsequently, a higher oil and gas yield, HOSTAFRAC SF is a uniquely composed system of surfactants, including sustainably sourced sugar-based amides, a solvent, and co-solvent. These components form an advanced innovative technology system which enables the faster and more efficient return of fracture fluid, and enhances the production of hydrocarbon-containing fluids in fractured tight subterranean formations. According to Dr. Jonathan J. Wyld, Global Head of Innovation for Clariant Oil Services, the newly developed additive will enhance both operation productivity and sustainability.

"HOSTAFRAC SF is one of a series of high performance and environmentally-acceptable surfactant packages," he says. "The notion of using sustainably sourced sugar to make chemicals is not new, but using it in an advanced delivery system

► and in hydraulic fracturing operations is state-of-the-art. This development has and will continue to truly make a difference to our customers operations by delivering high performance chemistry, while at the same time improving the environmental profile of their operations.”

The major advantage of HOSTAFRAC SF is its ability to reduce both the surface tension and interface tension of fracturing fluids, ensuring that water can flow out of the channels more effectively. Additionally, HOSTAFRAC SF provides a dramatic increase in flowback of the hydraulic fracturing fluid used; using the additive, 87% of the fluid can be recovered, as compared to 13-22% without.

The decreased surface and interfacial tension also decreases the likelihood of formation damage and allows oil to be flushed discretely away by the low surface tension fluid. The fluid pumped out of the reservoir can then be recycled and reused, reducing water consumption and increasing the oil and gas quantities that can be extracted from the reservoir.

HOSTAFRAC SF is distributed worldwide.

Enhancing Field Profitability while Protecting the Environment

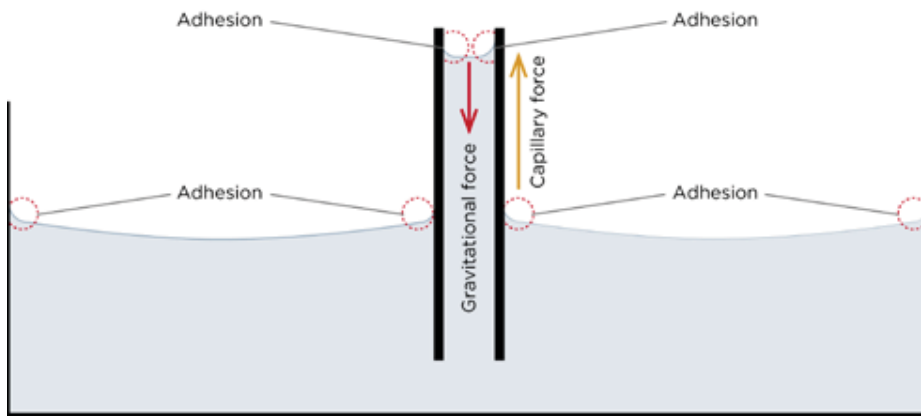
In-line with the company’s goals of continuous improvement and excellence for both customers and the environment, Clariant created the EcoTain® label, which represents sustainability efforts at a product level. As part of the EcoTain label, HOSTAFRAC SF has undergone a systematic, in-depth screening process using 36 criteria in all three sustainability dimensions: social, environmental and economic. EcoTain products significantly exceed sustainability market standards, have best-in-class performance, and contribute overall to the sustainability efforts of the company. ■

Contact:

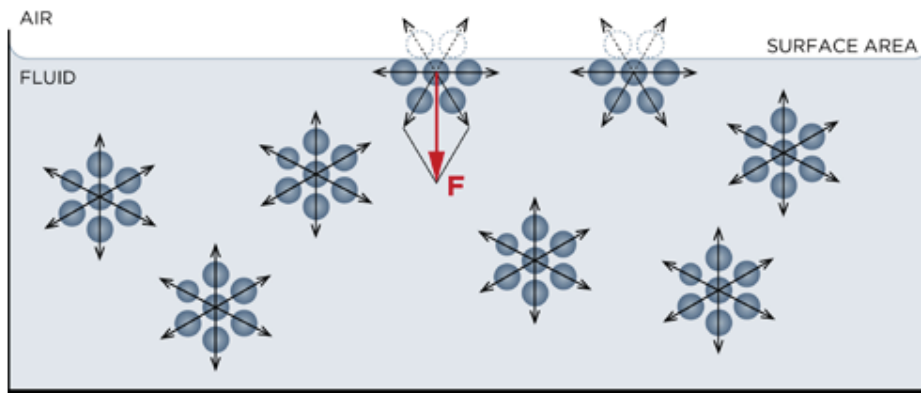
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CAPILLARY FORCES

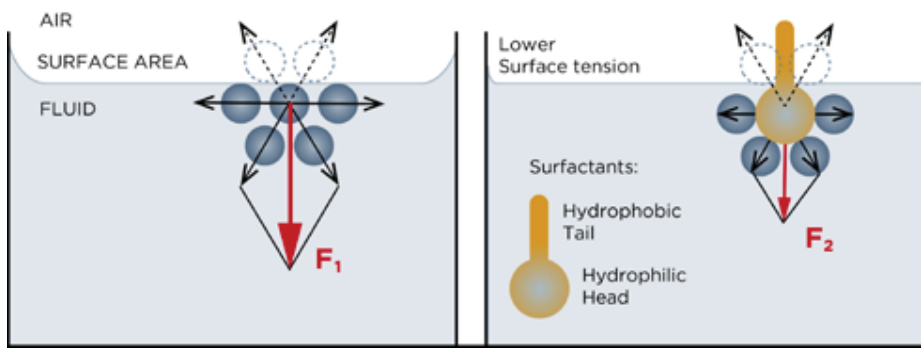
The thinner the capillary, the larger the capillary force



BONDING FORCES OF MOLECULES ON A BOUNDARY SURFACE



EFFECT OF SURFACTANTS ON SURFACE TENSION



- Bonding forces for adjoining molecules
- Lack of bonding forces for adjoining molecules
- Water molecules
- Lack of water molecules
- Bipolar surfactant molecule
- F** The force directed toward the internal fluid